WHAT IS CLAIMED:

1. A method of testing a friction component for an automatic transmission, comprising:

installing the friction component in a test stand having a drive shaft and a grounding anchor with a first part of the friction component attached to the drive shaft and a second part of the friction component attached to the grounding anchor;

rotating the drive shaft of the test stand with a motor drive until the drive shaft and the first part of the friction component rotate at a target sliding speed V_{target} and continuing rotation at V_{target};

applying an actuation force to an actuator of the friction component at a start time (t_0) to stroke the actuator over a stroke time (t_s) and to apply an engagement force to the friction component at a time t_0+t_s;

continuing operation of the motor drive to maintain the speed of rotation of the drive shaft at V_{target} for a period of time corresponding to a target torque phase time (t_t);

decoupling the motor drive from the drive shaft at a time $t_0+t_s+t_t$ and allowing the rotating speed of the drive shaft and the sliding speed of the friction component to decrease in response to engagement of the friction component; and

terminating the test when the sliding speed falls to zero during a time period referred to as an inertia phase (t_i).

2. The method of claim 1, wherein the actuator further comprises a return mechanism that applies a biasing force to return the friction component to a disengaged condition.

3. The method of claim 2, wherein t_s is set to approximately zero in the absence of any significant biasing force.

4. The method of claim 1 wherein the actuator further comprises a return mechanism that applies a biasing force to return the friction component to a

disengaged condition, wherein the torque phase interval (t_t) begins at the time t_0+t_s after the actuator is stroked against the return mechanism and terminates when a feedback signal representative of a predetermined engagement torque (T_{th}) is obtained.

5. The method of claim 4 wherein measurements of the drive shaft rotational speed are used to control the drive shaft rotating speed at V_{target} through a feedback control until the time $t_0+t_s+t_t$.

6. The method of claim 5 wherein measurements of an engagement torque T(t) are used as a feedback signal to monitor when T(t) is greater than zero to determine the time t_0+t_s.

7. The method of claim 4 wherein measurements of a speed V(t) of the drive shaft are used to control the drive shaft rotating speed V(t) through a feedback control until an engagement torque T(t) reaches the engagement torque T_{th}.

8. The method of claim 7 wherein measurements of the engagement torque T(t) are used as a feedback signal to monitor whether the engagement torque level has reached T_{th}.

9. A method of testing a friction component for an automatic transmission, comprising:

installing the friction component having first and second parts in a test stand having a drive shaft and a grounding element with the first part of the friction component attached to the drive shaft and the second part of the friction component attached to the grounding element;

rotating the first part of the friction component with a motor drive until the drive shaft and first part of the friction component rotate at a target sliding speed (V_{target}) and continuing rotation at V_{target};

applying an actuation force to an actuator of the friction component at a time (t_0);

continuing operation of the motor drive to maintain the speed of rotation of the drive shaft at V_{target} for a period of time until a predetermined level of torque (T_{th}) is obtained, wherein upon obtaining T_{th} the motor torque is reduced to a predetermined level (T_m), upon reduction to T_m the sliding speed of the drive shaft decreases, and terminating the test when the sliding speed falls to zero during a time period referred to as an inertia phase (t_i).

10. The method of claim 9 wherein the level of T_m can be adjusted to lengthen or shorten t_i without modifying a mechanical inertia wheel that is attached to the drive shaft.

11. A system for testing a friction component for an automatic transmission, comprising:

a test stand having a drive shaft and a grounding portion;

a friction component installed in the test stand, the friction component having a first part attached to the drive shaft and a second part attached to the grounding portion;

a motor drive rotating the drive shaft of the test stand until the first part of the friction component and the drive shaft rotate at a target sliding speed (V_{target}) and continuing rotation at V_{target};

an actuator of the friction component being actuated at a time (t_0) and the actuator having a return mechanism that applies a biasing force to return the friction component to a disengaged condition, causing the friction component to be stroked against the return mechanism during a time (t_s) to apply an engagement force at a time t_0+t_s; and

wherein operation of the motor drive is continued to maintain the speed of rotation of the drive shaft at V_{target} for a period of time corresponding to a target torque phase time (t_t), and decoupling the motor drive from the drive shaft at the end of t_t allowing the rotating speed of the drive shaft and first part of the friction component to decrease in response to engagement of the friction component, and terminating the test

when the sliding speed falls to zero during a time period referred to as an inertia phase (t_i).

12. The system of claim 11, wherein a time for decoupling the motor drive is $t_0+t_s+t_t$.

13. The system of claim 11 wherein the target torque phase interval (t_t) begins at the time t_0+t_s and terminates when a feedback signal representative of a predetermined level of engagement torque (T_{th}) is obtained.

14. The system of claim 13 wherein measurements of an engagement torque T(t) are used as a feedback signal to monitor whether the engagement torque level has reached the predetermined level of engagement torque (T_{th}).